



# Trouble-free packaging

THE AWRI helpdesk team often receives questions about packaging and avoiding problems when wine goes from tank to bottle and beyond. Some of the more common ones are outlined below.

## HOW MUCH SO<sub>2</sub> IS LOST DURING PACKAGING?

This will depend on how carefully a wine is protected from oxygen, and can vary from 5 mg/L free SO<sub>2</sub> up to 10 mg/L and more. Oxygen is the biggest enemy at packaging, and it is important to minimise oxygen exposure during storage, transport and the lead-up to packaging – both by using appropriate inert gas coverage and keeping wines on minimal ullage. A general recommendation for maintaining adequate SO<sub>2</sub> in wine post-bottling is to adjust the free SO<sub>2</sub> prior to bottling to a level 5 mg/L higher than the desired post-bottling level. Note that if a wine has been exposed to high amounts of oxygen during storage, transport or in the lead-up to bottling, the rate of SO<sub>2</sub> loss post bottling can be quite dramatic and may not follow typical patterns of consumption.



## I NEED TO ADD SOME LAST MINUTE COPPER SULFATE TO MY WINE, SHOULD I PUSH MY BOTTLING DATE BACK?

It is a good idea to let the wine re-stabilise after a copper sulfate addition, as late additions can see the risk of a copper-related haze increase. Many of the cases of copper haze investigated at the AWRI have been related to the addition of copper sulfate immediately before bottling, often as 'protection' against a sulfide problem that might occur. To avoid this issue the helpdesk team recommends delaying your bottling schedule by at least a week if you need to add copper sulfate immediately prior to bottling.

## DO I NEED TO COLD STABILISE AGAIN IF I'M SWEETENING MY WINE UP WITH GRAPE JUICE CONCENTRATE JUST BEFORE BOTTLING?

Good grape juice concentrate (GJC) should be both cold stable and protein stable; however, this doesn't necessarily mean that the wine will remain stable after an addition. The effect will depend on how much GJC is added and whether or not the critical parameters (pH, alcohol, acid, protein and potassium)

are altered enough to cause a shift in stability. It is unlikely that a small addition of 0.5% GJC will affect wine stability; however, for additions of 1% or greater, the chance of instability becomes higher and it is recommended that cold and heat stability be re-checked.

## AFTER MY WINE WAS BOTTLED WITH NATURAL CORK CLOSURES THE BOTTLES WERE LEFT UPRIGHT INSTEAD OF INVERTED, IS THIS STANDARD PRACTICE?

Upright storage for 24 hours post-bottling is standard practice. This allows the corks to expand after being compressed for insertion, ensuring they provide the seal they are designed to achieve. If you do not invert or lay the bottles down after 24 hours, and keep the wines stored in an upright position for an extended period of time, this can allow the corks to dry out, making them much more susceptible to oxygen permeation. The worst case scenario is that the corks dry out, oxygen enters the bottles, acetic acid bacteria proliferate at the surface, and the wine loses its sulfur dioxide and becomes volatile. The helpdesk's recommendation is always to store wine under cork closures lying down or inverted after the initial 24 hours standing upright.

## MY EMPTY GLASS BOTTLES HAVE BEEN STORED OUTSIDE FOR A LONG TIME, IS IT STILL OK TO USE THESE?

Some care must be taken here to ensure the glass hasn't become weathered. Amorphous silica can form an unusual deposit in wines which is caused by the phenomenon known as 'bottle weathering'. When a glass bottle is blown, soda vapour condenses on the inner surface of the bottle and partially reacts with the glass surface to form an alkali-rich skin. Weathering of an empty bottle occurs in humid conditions when water vapour condenses on the inside of the bottle and reacts with the alkali layer. With a low level of weathering, a sodium carbonate layer forms on the inside of the bottle, known as a 'bloom', which is easily removed during bottle washing pre-filling. When there is a large amount of water present during storage, this bloom is washed away leaving a silicon-rich layer which subsequently can lead to the formation of needle or scroll-like amorphous silica structures in wine.

## HOW USEFUL IS FILTERABILITY TESTING PRIOR TO BOTTLING?

If performed correctly filterability testing can be very useful and provide a great insight into whether or not a wine is likely to foul a membrane filter. A key point to remember is that when measuring a wine's filterability index prior to bottling, the best information will be obtained if the test filter is identical to the bottling filter you intend to use.

## MORE QUESTIONS?

For more information about trouble-free packaging, contact the AWRI helpdesk team on [helpdesk@awri.com.au](mailto:helpdesk@awri.com.au) or 08 8313 6600.

